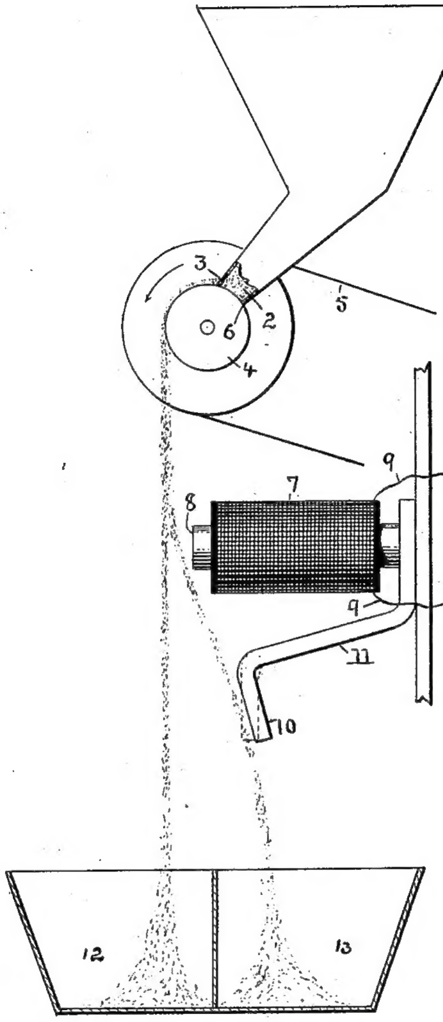
(No Model.)

T. A. EDISON.

MAGNETIC SEPARATOR.

No. 470,929.　　　　Patented Mar. 15, 1892.



Witnesses
Norris A. Clark.
E. Conrau

Inventor
T. A. Edison,
By his Attorneys
Dyer & Seely.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, OF LLEWELLYN PARK, NEW JERSEY.

MAGNETIC SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 470,929, dated March 15, 1892.

Application filed October 1, 1891. Serial No. 407,453. (No model.)

To all whom it may concern:

Be it known that I, THOMAS A. EDISON, a citizen of the United States, residing at Llewellyn Park, in the county of Essex and State of New Jersey, have invented a certain new and useful Improvement in Magnetic Separators, (Case No. 932,) of which the following is a specification.

In my patent, No. 228,329, dated June 1, 1880, I have described a separator consisting of a hopper for feeding mingled magnetic and non-magnetic substances, a magnet, and receptacles for the substances, in such relation to each other that the trajectory of falling magnetic substances is altered, the magnetic and non-magnetic substances thus falling into different receptacles, and the present invention constitutes an improvement on this general form of apparatus.

The accompanying drawing is a view illustrating the improved apparatus.

1 is a hopper or receptacle containing or adapted to contain the pulverized ore 2, or other material containing magnetic and non-magnetic particles. At the lower end of the hopper is an outlet 3, below which is a feed-roller 4, driven in the direction of the arrow by a belt 5 or other suitable means. This feed-roller is so placed as to prevent material passing out at the point 6, but by its friction with the material in the hopper carries it forward and allows it to drop over the front of the roller, thereby causing a constant and even stream of the fine ore to fall past the face of the magnet-poles. Without this feed-roller the ore does not escape regularly from the hopper. At some distance below the roller is a magnet 7, consisting of a straight pole-piece 8, on which the magnetizing-coil, connected to the circuit-wires 9, is wound. The end of the pole-piece 8 is a short distance to one side of the plane in which the ore tends to fall, and by its attraction draws the magnetic particles out of the perpendicular plane, as indicated. The magnet is provided with a second pole 10, which is formed by applying a **Z**-shaped bar or plate 11 to the rear end of the arm 8. It is evident that this bar or plate need not be exactly **Z**-shaped, but may be varied in shape to some extent. The forward end of the bar or plate 11 is bent, as indicated in full or as indicated in dotted lines, thereby forming an extended pole parallel or approximately parallel to the path of the magnetic particles as changed by the magnet. The pole 10 terminates behind or to the rear of the pole 8, so that the magnetic material will not be thrown against this second pole and stick to it.

The construction described is an improvement on that described in my patent, No. 248,432, since it reduces the danger of magnetic particles coming against and sticking to the extended face of the lower pole. In this case I do not claim, broadly, the use of a magnet in a separator having its lower pole at the rear of the upper pole, that being shown in said Patent No. 248,432; but this case is confined to the improved form of magnet described.

12 is a receptacle for the non-magnetic material, and 13 a receptacle for the magnetic material.

What I claim is—

1. The combination of a receptacle adapted to contain fine magnetic ore and to allow escape of the same, a magnet for changing the trajectory of the magnetic particles in the ore, said magnet having two poles in position to act on the falling ore, one pole being below the other and formed by a **Z**-shaped arm having an end bent to form an extended pole substantially parallel with the falling magnetic material, substantially as described.

2. The combination of a receptacle adapted to contain fine magnetic ore and to allow escape of the same, a magnet for changing the trajectory of the magnetic particles in the ore, said magnet having two poles in position to act on the falling ore, one pole being behind the other and formed of an arm the outer end of which is bent away from the path of falling non-magnetic material, substantially as described.

3. A magnet having a main arm, a coil thereon, and a **Z**-shaped magnetic arm, one end of which is secured to said main arm and the other end of which forms one of the poles of the magnet, substantially as described.

4. A magnet having a main arm, a coil thereon, a bent arm, one end of which is secured to said main arm and the other end of which is bent away from the vertical plane and forms one pole of the magnet and terminates to the

rear of the other pole, substantially as described.

5. The combination, in an ore-separating apparatus, of means for showering the ore, a magnet for deflecting magnetic particles in said ore, said magnet having two poles, the lower pole being behind the upper pole and formed of a **Z**-shaped arm, one end of which is bent to form an extended pole-piece, and a single magnetizing-coil for said magnet and on the main pole or core, substantially as described.

This specification signed and witnessed this 28th day of August, 1891.

THOS. A. EDISON.

Witnesses:
CHARLES M. CATLIN,
JOHN F. RANDOLPH.